

REMARKS/ARGUMENTS

Claims 1, 6-10 and 20-30 are pending in the instant Application. Applicant gratefully acknowledges the indication of allowable subject matter in claims 10 and 20.

Amendments to the Claims

As amended above, independent claim 1 recites “the two or more types of powders discretely mixed substantially throughout a cross section of the brazing sheet.” This feature is fully supported in the original specification as filed, for example at p. 8, lines 3-5, among other places. No new matter has been added.

Independent claim 21 is amended to recite “the powder of the brazing filler metal composition is a mixture of at least two or more types of powders which are mixed in a predetermined proportion of weight to have a composition of a brazing filler metal, and the powder of the brazing filler metal composition is not completely alloyed and is in a mixed state.” This features is fully supported in the original specification as filed, for example at claims 24-25, among other places. No new matter has been added.

New claim 30 is presented, and recites “sintering of the powder being in the sheet shape is performed at a temperature corresponding to between about 50% and about 85% of a liquidus temperature of the brazing filler metal composition.” This feature is fully supported in the original specification as filed, for example at p. 5, lines 13-15, among other places. No new matter has been added.

Rejections under 35 U.S.C. § 103

Claims 1, 6-9 and 21-29 are rejected under 35 USC § 103(a) as obvious over U.S. Patent No. 5,3787,899 to Hashimoto in view of European Patent Application EP 0 867 248 A1 by Sugikawa. Applicant respectfully traverses the rejection.

Independent claim 1, as amended above, recites

A brazing sheet having a brazing filler metal composition and a structure of a sintered powder of at least two or more types of powders, the two or more types of powders discretely mixed substantially throughout a cross section of the brazing sheet...

Independent claim 21 recites

A method of producing a brazing sheet, comprising:

...

sintering of the powder being in the sheet shape, wherein the powder of the brazing filler metal composition is a mixture of at least two or more types of powders which are mixed in a predetermined proportion of weight to have a composition of a brazing filler metal, and the powder of the brazing filler metal composition is not completely alloyed and is in a mixed state.

The Office Action offers Hashimoto as a base reference, alleged to teach all features of independent claim 1 except that the product is sintered in a sheet shape. The Office Action also offers Sugikawa, alleged to teach a production method including rolling a powder metal sheet and feeding the sheet through a sintering oven. The Office Action avers that it would have been obvious to modify the method for producing solder of Hashimoto by using the step of sintering the powder as taught by Sugikawa, and that the brazing sheet of Hashimoto in view of Sugikawa was identical to or only slightly different than the claimed alloy article prepared by the method of claims. Applicant respectfully disagrees.

Hashimoto describes a method for producing solder that contains additive particles (5) therein for maintaining its shape. The Office Action (on page 2-3) describes that Hashimoto discloses a method including powder roll compaction of two or more types of powders. However, as it is clearly described, solder material constituting the main component of the solder sheet is molten (1) in a bath (9) and is teemed into a sheet through opening (9a). This molten solder sheet is cooled (6) before rolling (2) into a sheet shape (e.g., lines 45-68 on column 3 and FIG. 2). A mixed state of powders that are not completely alloyed, as recited in claims 1 and 21, cannot be obtained by cooling a molten metal.

In addition, the additive particles (5) of Hashimoto do not constitute a composition of solder. As it is described in the title, additive particles are contained to maintain the shape of the solder in a bonding structure (e.g., 13-19 on column 5). For this purpose, the additive particle preferably have a melt point higher than that of the solder material and are formed of insulating materials (Col. 2, line 65 – Col. 3, line 2). The structure in which only a small amount (e.g., Col. 5, lines 4-6) of additive particles are sandwiched between the two rolled solder material sheets (56-59 on column 2) is materially different from that of a brazing sheet of Claims 1 or 21 of the present application. Even though the solder of Hashimoto is subjected to sintering, the sintered

product would not have a structure similar to that of a brazing sheet of Claim 1, or produced by the method of claim 21.

Without prejudice to the foregoing, as amended above, independent claim 1 recites “the two or more types of powders discretely mixed substantially throughout a cross section of the brazing sheet.” Hashimoto, taken singly or in combination with Sugikawa, teaches away from discretely mixed powders substantially throughout a cross section of the brazing sheet, because in each embodiment of Hashimoto, the filler metal is molten, not powder, and therefore not discretely mixed, but homogeneously alloyed.

Sugikawa’s teaching of a linear sintering oven (4), does not ameliorate the deficiencies of Hashimoto relative to claim 1. It has been held by the courts that to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As described above, neither Hashimoto nor Sugikawa, taken singly or in combination, teach or fairly suggest all features of independent claims 1-21.

Dependent claims 6-9 and 22-30 each depend, either directly or indirectly from independent claims 1 or 21, and incorporate the features of claims 1 or 21 by reference. These dependent claims are each separately patentable, but in the interest of brevity they are offered as patentable for at least the same reasons as their underlying independent base claims.

Therefore, Applicant respectfully submits that the rejection has been obviated, and kindly requests favorable reconsideration and withdrawal.

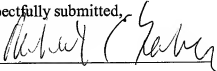
Conclusion

In light of the foregoing, Applicant submits that the application is in condition for allowance, and kindly solicits and early and favorable Notice of Allowability.

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